BLACK BOX NETWORK SERVICES

LPBG716A
LPBG724A

16-/24-Port Gigabit PoE PSE Web Smart Switch with 4 SFP Slots

Bring PoE into your Gigabit network.

Models available with sixteen or twenty-four autosensing, auto-negotiating 10-/100-/1000-Mbps ports; four are dual-media ports, which may be used for copper or fiber (SFPs).

Customer Support Information

Order toll-free in the U.S.: Call 877-877-BBOX (outside U.S. call 724-746-5500)
FREE technical support 24 hours a day, 7 days a week: Call 724-746-5500 or fax 724-746-0746
Mailing address: Black Box Corporation, 1000 Park Drive, Lawrence, PA 15055-1018
Web site: www.blackbox.com • E-mail: info@blackbox.com

Caution

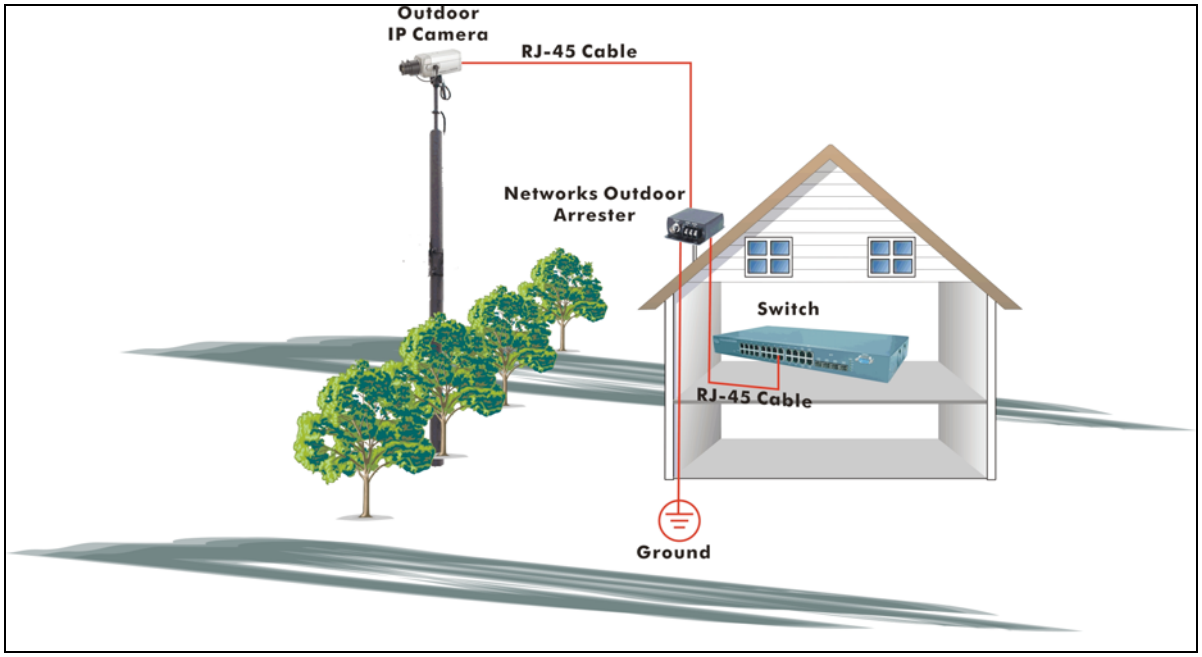
Circuit devices are sensitive to static electricity, which can damage their delicate electronics. Dry weather conditions or walking across a carpeted floor may cause you to acquire a static electrical charge.

To protect your device, always:

∞Touch the metal chassis of your computer to ground the static electrical charge before you pick up the circuit device.

∞Pick up the device by holding it on the left and right edges only.

∞ If you connect an outdoor device to the switch with cable, add an arrester on the cable between the outdoor device and the switch.



Add an arrester between outdoor device and this switch

Federal Communications Commission and Industry Canada Radio Frequency Interference Statements

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.
Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

Normas Oficiales Mexicanas (NOM) Electrical Safety Statement

INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc..
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación,
    o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
    A: El cable de poder o el contacto ha sido dañado; u
    B: Objectos han caído o líquido ha sido derramado dentro del aparato; o
    C: El aparato ha sido expuesto a la lluvia; o
    D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
    E: El aparato ha sido tirado o su cubierta ha sido dañada.

European Community (CE) Electromagnetic Compatibility Directive

This equipment has been tested and found to comply with the protection requirements of European Emission Standard EN55022/EN61000-3 and the Generic European Immunity Standard EN55024.

EMC:

EN55022 (2003)/CISPR-2 (2002): class A
IEC61000-4-2 (2001): 4KV CD, 8KV AD
IEC61000-4-3 (2002): 3V/m
IEC61000-4-4 (2001):1KV (power line), 0.5KV (signal line)

1. Specifications

1.1 Hardware Specifications

Certifications: FCC Class A, CE

Flow Control: IEEE802.3x compliant for full duplex;
Backpressure flow control for half duplex

Full Forwarding/Filtering Packet Rate: PPS (packets per second)

Forwarding Rate	Speed
148,8000PPS	1000Mbps
148,800PPS	100Mbps
14,880PPS	10Mbps

Standards Compliance: IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX, IEEE 802.3z 1000BASE-T, IEEE 802.3x Flow Control, IEEE 802.3ad Trunk, IEEE 802.3af Power over Ethernet (PoE), IEEE 802.1Q VLAN, IEEE 802.1p QoS, IEEE 802.1x Port-based Network Access Control, IEEE 802.1w Rapid Spanning Tree Protocol

Switching Method: Store and forward

Transmission Media: 10BASE-T CAT 3, 4, 5 UTP/STP; 100BASE-TX CAT 5 UTP/STP; 1000BASE-T CAT 5e, 6 UTP/STP

Transmission Mode: 10/100/1000Mbps support full or half duplex

Transmission Speed: 10/100/1000Mbps for TP

Network Interface: LPBG716A: 16-port 10/100/Gigabit with PoE (full power);
LPBG724A: 24-port 10/100/Gigabit with PoE (full power);

Connectors: LPBG716A: (16) RJ-45 including 4-port combo UTP/SFP Gigabit;
LPBG724A: (24) RJ-45 including 4-port combo UTP/SFP Gigabit

LED Indicators: Per Port: LINK/ACT
PoE Port: Act/ Status
Per Unit: Power

Temperature Tolerance: Operating: +32 to +131° F (0° to +55°C);
Storage: -4 to +194° F (-20° to + 90° C)

Humidity: 10 to 90% relative humidity (non-condensing)

Power Input: 100–240 VAC, 50–60 Hz

PoE Power Output: LPBG716A: 260 Watts maximum;
LPBG724A: 390 Watts maximum

Size: 1.7 H x 17.3 W x 8.7 D (4.4 x 44 x 22 cm)

Weight: LPBG716A: 7.9 lb. (3.6 kg);
LPBG724A: 1.7 lb. (3.9 kg)

1.2 Management Software Specifications

Port Management: Port Configuration, Port Mirroring, Broadcast Strom Control, PoE On/ Off Setting

VLAN Setting: Port-based/Tag-based, VLAN ID: 1–4094K

Trunking: 2 groups (1–4 ports for each group)

VLAN Function: Port-Base/802.1Q-Tagged, allowed up to 256 active VLANs in one switch

QoS Setting: Up to 4 queues

Security Filter: MAC address filtering

RSTP: Rapid Spanning Tree Protocol

IGMP Snooping V1/V2

Backup/Recovery Configuration

2. Overview

2.1 Features

Supports the following:

- Real-time status (link, speed, duplex) of each port
- Port setting for enable or disable operation (the 1st port can't be disabled)
- Pport setting for N-Way or force mode operation
- Broadcast Storm Protection
- Port-based VLAN
- Priority queues for QoS

2.2 What's Included

Your package should include the following items. If anything is missing or damaged, please contact Black Box Technical Support at 724-746-5500.

- (1) 16-Port or 24-Port 10/100/Gigabit PoE PSE Web Smart Switch
- (1) Mounting Accessory (for 19" Rackmount)
- (1) AC Power Cord
- (1) CD-ROM containing this user's manual

2.3 Front and Back Panels

Front Panels

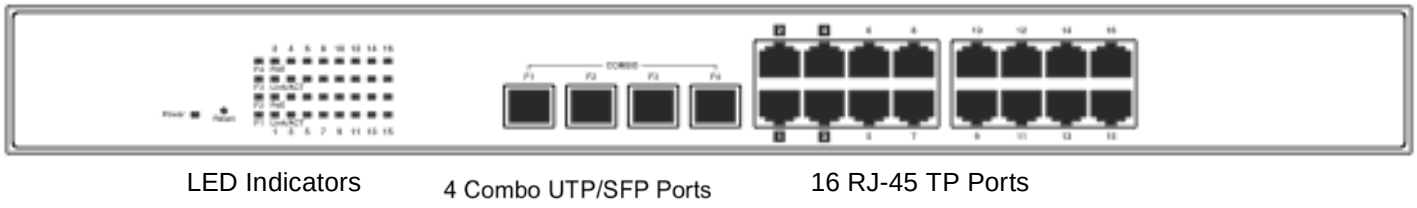


Figure 2-1 LPBG716A Front Panel

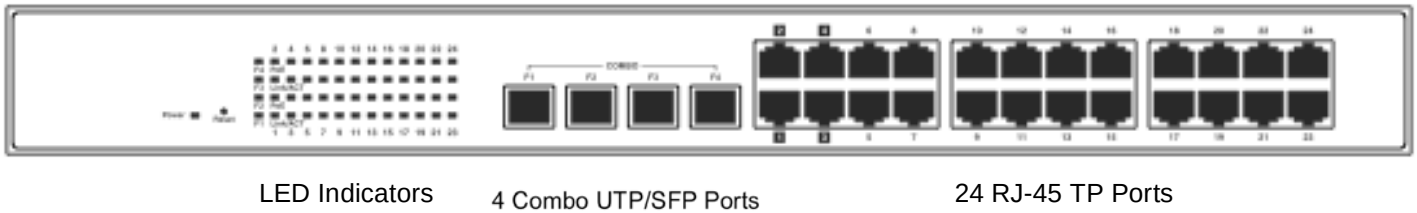


Figure 2-2 LPBG724A Front Panel

Rear Panel

AC Power Input

Figure 2-3. LPBG716A or LPBG724A Rear Panel.

2.4 LED Indicators

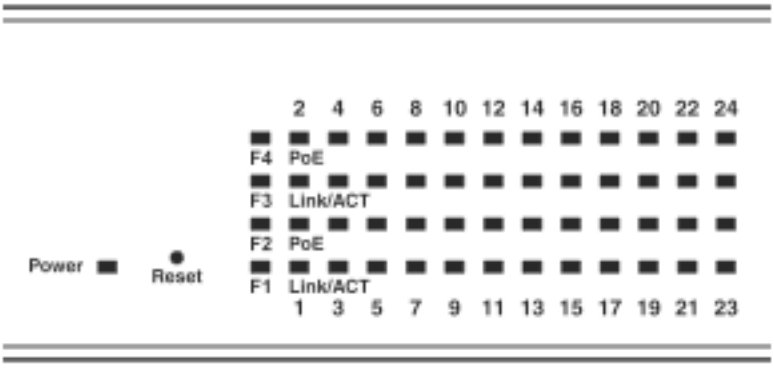


Figure 2-4. LED Indicators on the LPBG724A.

LED	Color	Function
		System LED
POWER	Green	Lit when power is on and good
RESET		Reset button is for management system restore
		10/100/Gigabit Ethernet TP Port 1 to 24 LEDs
		Lit when connection with remote device is good
LINK/ACT	Green	Blinks when any traffic is present
		Off when disconnected
PoE	Green	Lit when PoE Power is active
	Green	Lit when connection with remote device is good
F1–F4		Blinks when any traffic is present
		Off when disconnected

3. Installation

3.1 Hardware and Cable Installation

CAUTION: Wear a grounding device to avoid damage from electrostatic discharge.

Be sure that the power switch is OFF before you connect the power cord to the power source.

3.1.1 TP Port and Cable Installation

1. The switch's TP ports support Auto-MDI/MDI-X crossover, so you can use straight-through (Cable pin-outs for RJ-45 jack 1, 2, 3, 6 to 1, 2, 3, 6 in 10/100M TP and 1, 2, 3, 4, 5, 6, 7, 8 to 1, 2, 3, 4, 5, 6, 7, 8 in Gigabit TP) and crossed-over (Cable pin-outs for RJ-45 jack 1, 2, 3, 6 to 3, 6, 1, 2). You don't have to figure out if the cable is pinned straight-through or crossover, just plug it in.

2. Connect one end of a CAT5 grade RJ-45 twisted-pair (TP) cable or above to a twisted-pair port on the switch. Connect the other end to a network device, such as a workstation or a server.

3. Repeat the above steps, as needed, for each RJ-45 port to be connected to a 10/100/Gigabit TP device.

The switch is now ready to operate.

3.1.2 Installing Optional SFP Transceiver Module

NOTE: If you do not plan to install SFP fiber transceivers in the switch's ports F1–F4, skip this section.

Slide the fiber transceiver module into one of the two open module slots in the switch as shown in Figure 3-1.

Connecting the SFP Module to the Chassis

The optional SFP modules are hot-swappable, so you can plug or unplug them before or after powering on the switch.

1. Verify that the SFP module is the right model and conforms to the chassis.
2.
3. Slide the module into the slot. Make sure that the module is properly seated against the slot socket/connector.
4.
5. Connect the fiber optic network cable to the connector(s) on the module.
6.
7. If you want to install a second module in the switch, repeat steps 1–3.

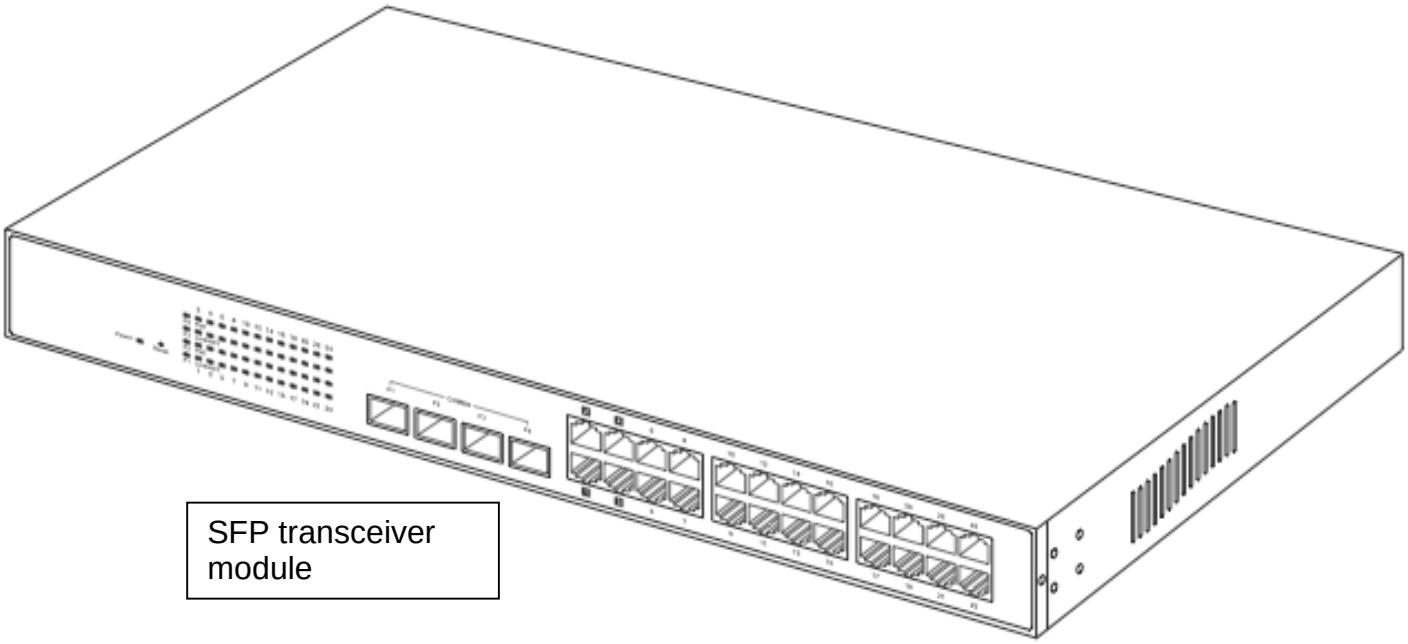


Figure 3-1.

3.1.3 Power On

The switch supports a 100–240 VAC, 50–60 Hz power supply. The power supply will automatically convert the local AC power source to DC power. It does not matter whether or not any connection is plugged into the switch when powering on. After the power is on, all LED indicators will light up and then all will turn off, except for the power LED, which stays on.

3.2 Installing Switch to a 19-Inch Wiring Closet Rail

CAUTION: Allow proper spacing and air ventilation for the cooling fan at both sides of the switch.

Wear a grounding device for electrostatic discharge.

1. Using two screws (included), attach the rackmount ears to the switch's left and right sides. See Figure 3-2.

2. Line up the mounting holes on the switch assembly (the switch with rackmount ears installed) with the mounting holes on a 19" wiring closet rack. Install two screws (included) to hold the switch in place in the rack.

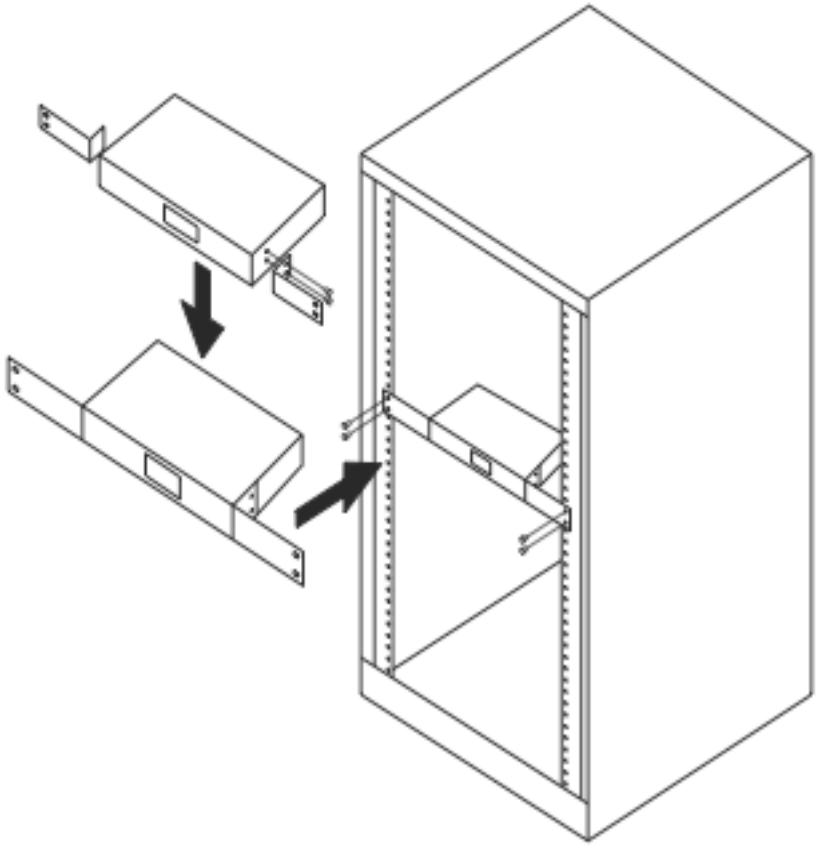


Figure 3-2 Install the switch chassis in a 19"rack

3.3 Cabling Requirement

For successful installation and good network performance, use CAT5, CAT5e, or higher cable. If you use non-compliant cables, the LAN will work poorly.

For a Fast Ethernet TP network connection, the grade of the cable must be CAT5 or CAT5e with a maximum length of 328 feet (100 meters).

3.4 Switch Cascading in Topology

Theoretically, the switch partitions the collision domain for each port in switch cascading so that you may uplink an unlimited number of switches. In practice, the network extension (cascading levels and overall diameter) must comply with the IEEE 802.3/802.3u and other 802.1 series protocol specifications, which limit the timing requirement from physical signals defined by the Media Access Control (MAC) and PHY802.3 series specification, and timer from some OSI layer 2 protocols such as 802.1d, 802.1q, and LACP.

The TP cables, and devices' bit-time (round-trip) delay are as described in Table 3-1.

100Base-TX TP	
Round trip Delay: 512	
Cat. 5 TP Wire:	1.12/m
TP to fiber Converter: 56	
Bit Time unit: 0.01 s (1sec./100 Mega bit)	

Table 3-1. Cable's bit-time (round-trip) delay.

The sum of all elements' bit-time delay and the overall bit-time delay of wires/devices must be within the required Round Trip Delay (bit times) in a half-duplex network segment (collision domain). For full-duplex operation, this does not apply.

3.5 Set IP Address, Subnet Mask, and Default Gateway IP Address

First, configure your PC IP address or change the IP address of the switch. Next, change the default gateway's IP address and subnet mask.

For example, suppose your network address is 10.1.1.0, and subnet mask is 255.255.255.0. You can change the switch's default IP address 192.168.2.1 to 10.1.1.1 and set the subnet mask to be 255.255.255.0. Then, choose your default gateway, for example, 10.1.1.254.

Default Value	LPBG716A/LPBG724A	Your Network Setting
IP Address	192.168.2.1	10.1.1.1
Subnet	255.255.255.0	255.255.255.0
Default Gateway	192.168.2.254	10.1.1.254

After completing these settings in the switch, it will reboot and the configuration will take effect. After this step, you can operate the management through the network.

NOTE: There are no default DNS settings. DNS addresses are assigned by the network administrator.

Before you communicate with the switch, first finish the IP address configuration or make sure you know the switch's IP address. Then, follow the procedures listed below.

1. Set up a physical path between the configured the switch and a PC using a qualified UTP CAT 5 cable with RJ-45 connector.

NOTE: If a PC directly connects to the switch, you have to setup the same subnet mask between them. The subnet mask may be different for the PC in the remote site. See the screen shown below for the switch's default IP address information.

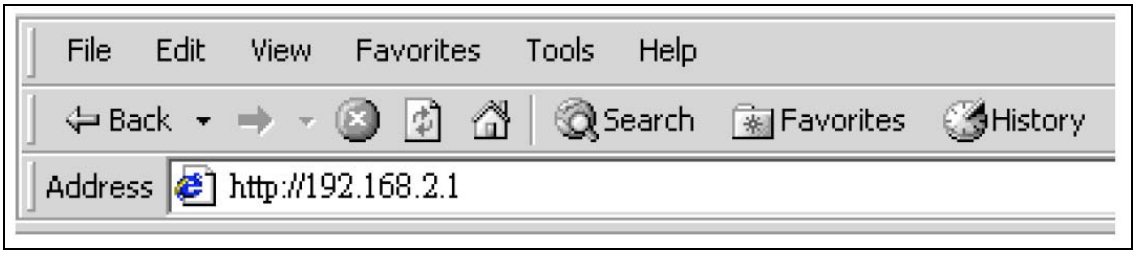


Figure 3-4. Type address in URL column.

Default IP address: 192.168.2.1
Default Password: admin

2. Run the Web browser and follow the menu.

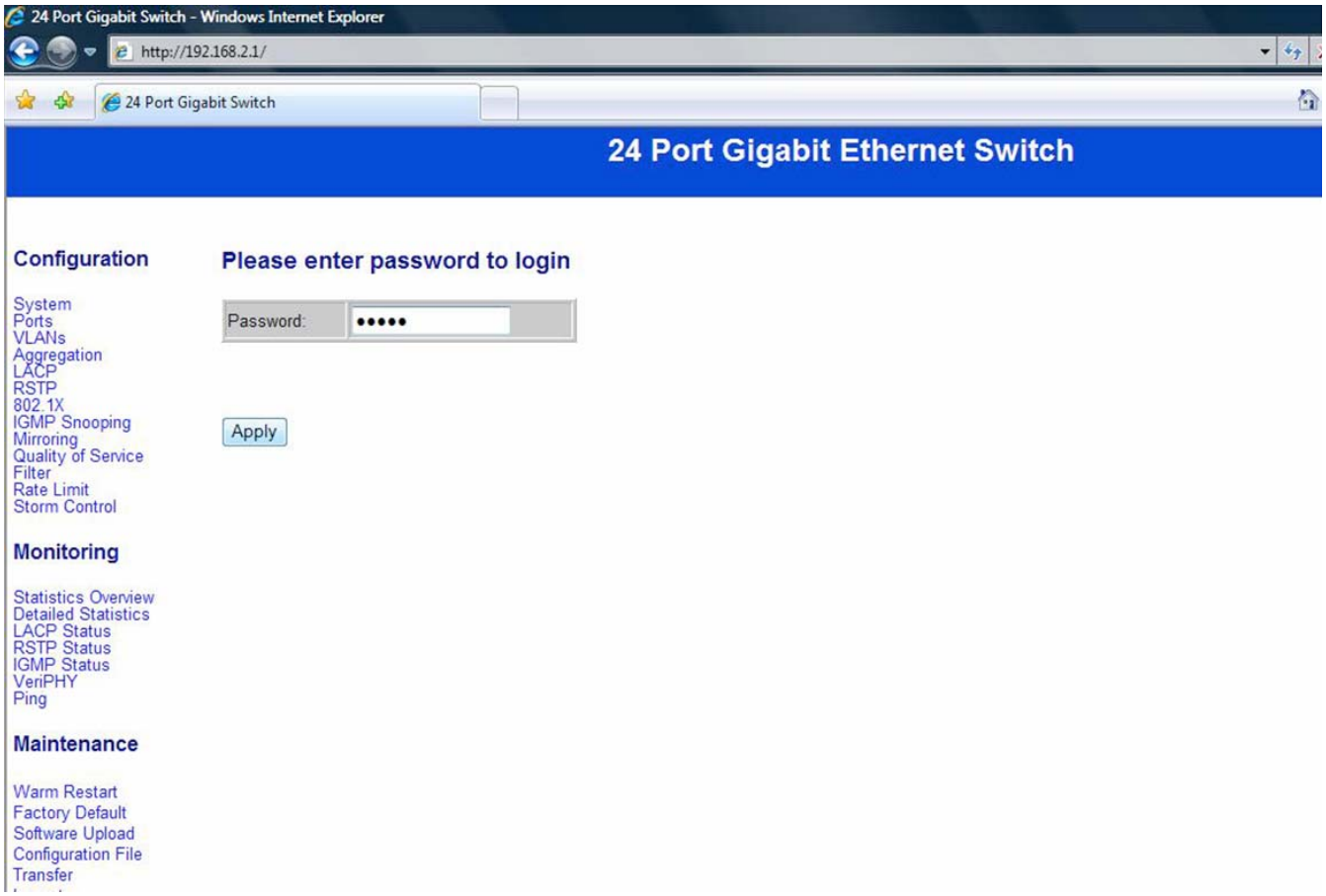


Figure 3-5. Login Screen for Web.

4. Web-based Management Operation

This chapter instructs you how to configure and manage the switch through the Web user interface it supports. You can access and monitor the switch's status, including port activity, spanning tree status, port aggregation status, VLAN, and priority status and so on from any one port on the switch.

The default values of the managed switch are listed in the table below:

IP Address: 192.168.2.1
Subnet Mask: 255.255.255.0
Default Gateway: 192.168.2.254
Password: admin

Type http://192.168.2.1 in the address row in a browser. It will show the following screen (Figure 4-1) and ask you to input the ID and password to login and access authentication. The default ID and password are both "admin." The first time you login, please enter the default ID and password, then click the **<OK>** button. The login process now is completed.

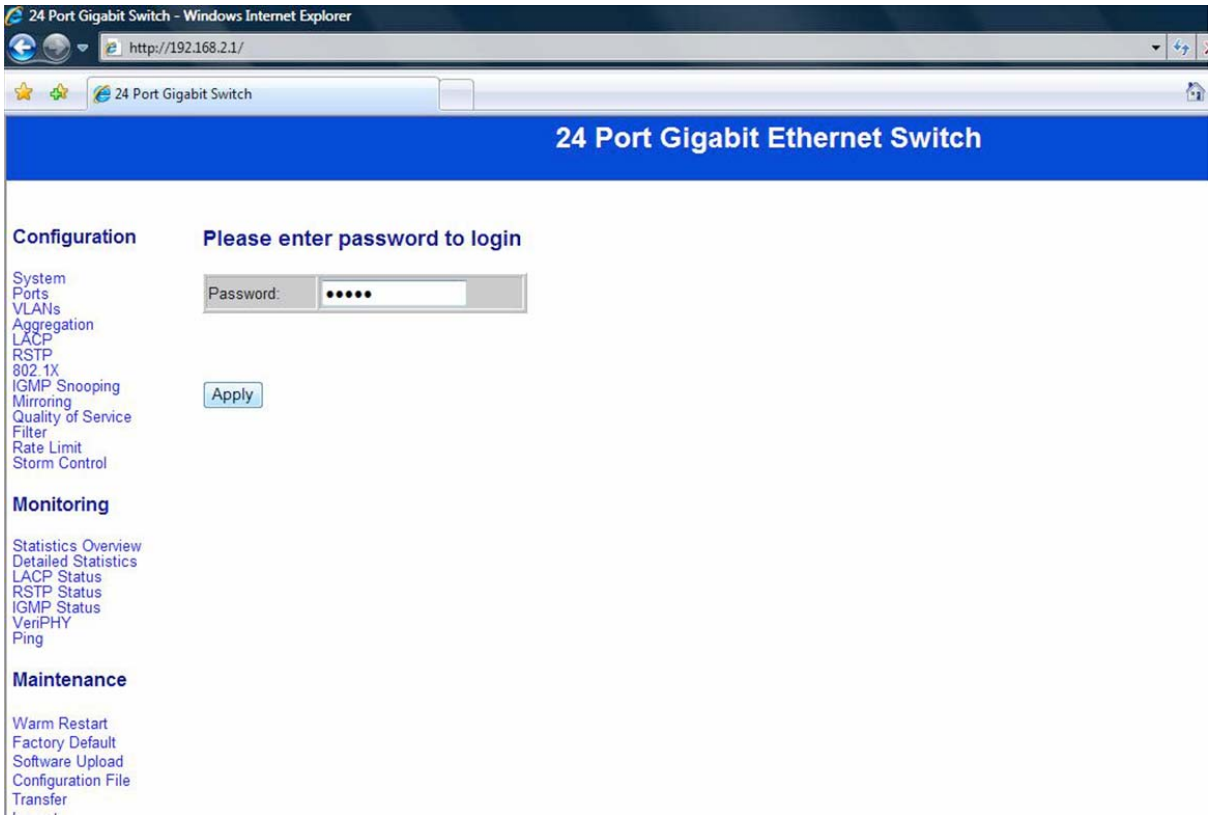


Figure 4-1. Login Screen for Web.

4.1 Web Management Home Overview

After you login, you can select one of the configurations by clicking the icon in the configuration bar. There are four major categories for your configuration.

- Configuration
-
- Monitoring
-
- Maintenance
-
- Logout

4.2 Configuration

4.2.1 System

The System Configuration screen shows system status, including: MAC address, system firmware version, and so on. You can change the user name, the password, and IP address, and click “Apply” to confirm the new change. Then, reset the switch by turning it off and then on again.

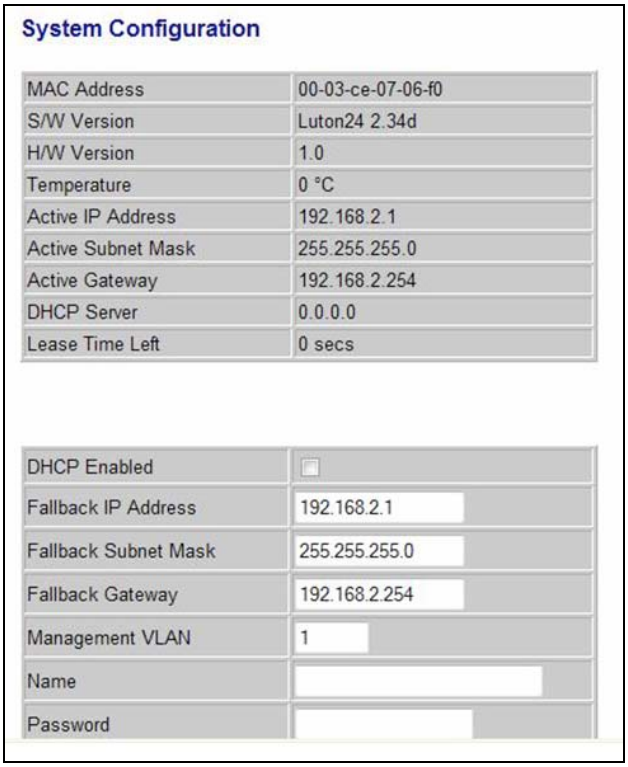


Figure 4-2 System configuration

4.2.2 Ports

You can enable or disable Jumbo Frames by clicking it in the check box.

Select the “Port no.” that you want to configure for the mode below:

- Auto speed

- enable/disable the port

- 10M/100M/1000M

- full/half-duplex

- enable/disable flow control

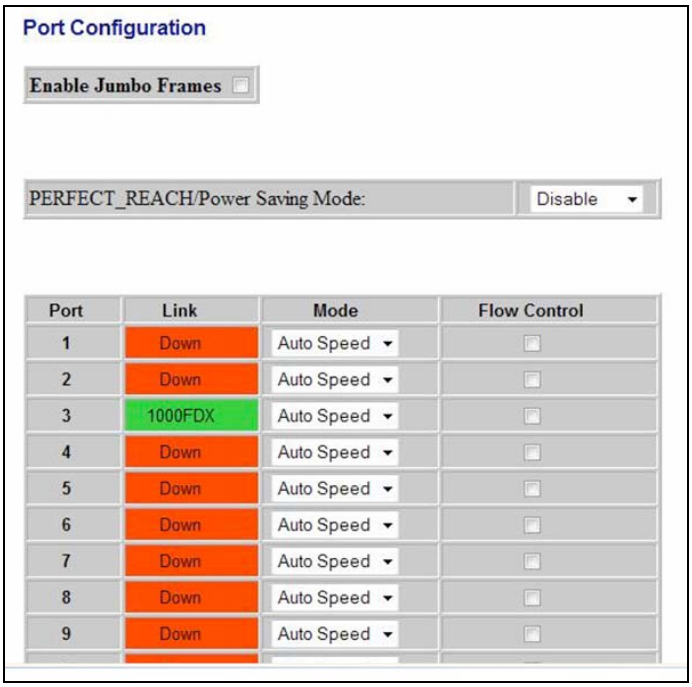


Figure 4-3. Ports configuration.

4.2.3 VLANs

There are 16 VLAN groups. Select and add a group into “VLAN ID” and then click the port number that you want to put into the selected VLAN group.

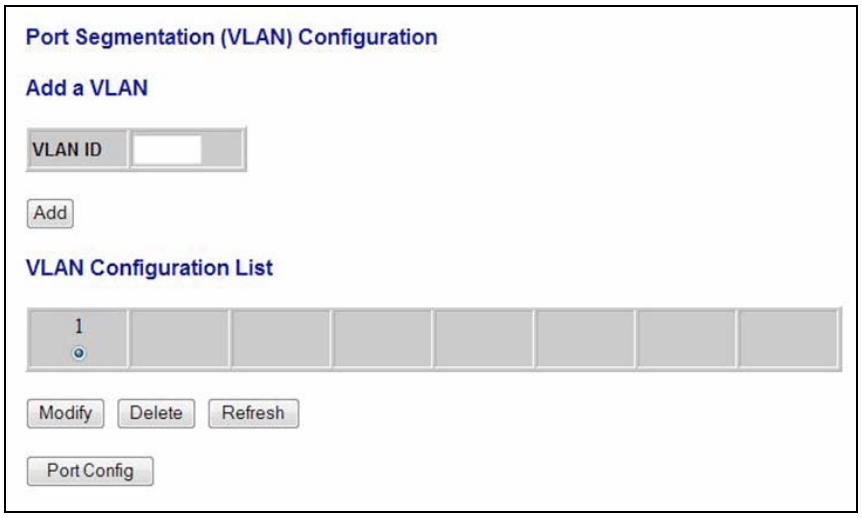


Figure 4-4. VLAN configuration.

4.2.4 Aggregation

Set up port trunk groups and then click the port number you want to include in the same group. Choose from eight groups. The maximum for one group is 24 ports.

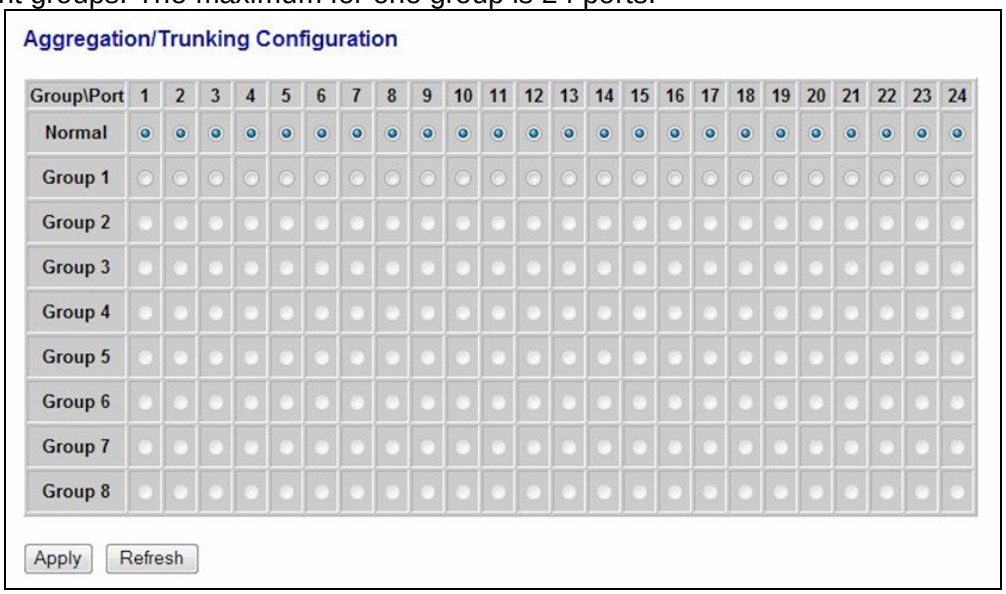


Figure 4-5. Aggregation/ Trunk configuration.

4.2.5 LACP

To enable/disable the protocol for a port, select the port number.

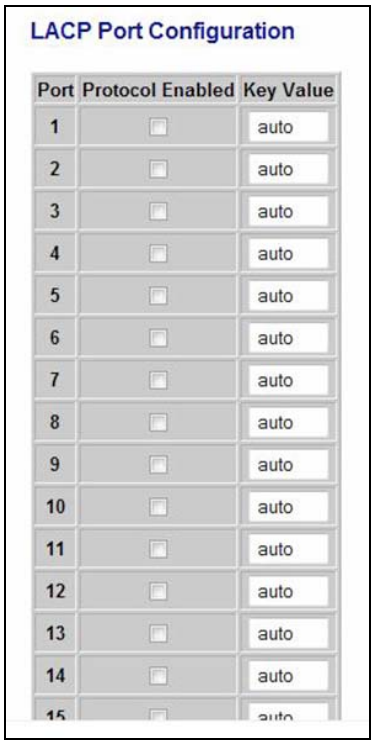


Figure 4-6. LACP Port configuration.

4.2.6 RSTP

To enable/disable the protocol for a port, select the port number.

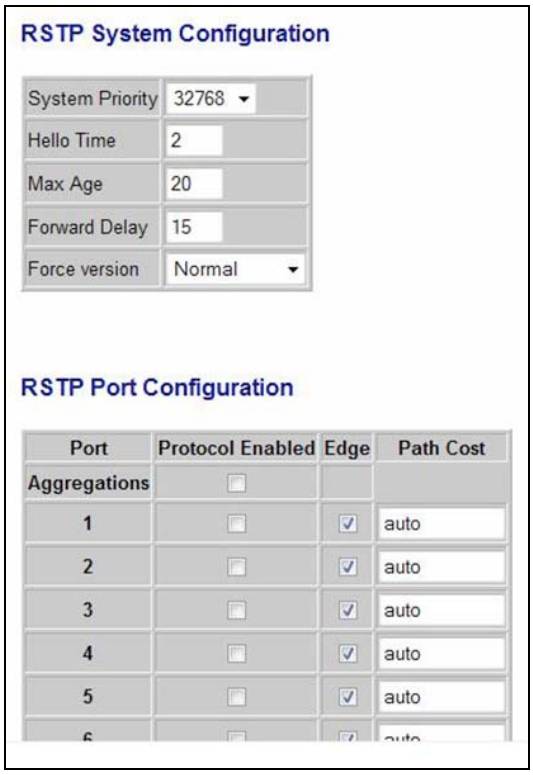


Figure 4-7 RSTP configuration

4.2.7 802.1x

Select the “Port no.” that you want to configure for the mode below:

- Auto

- Force Authorized

- Force Unauthorized

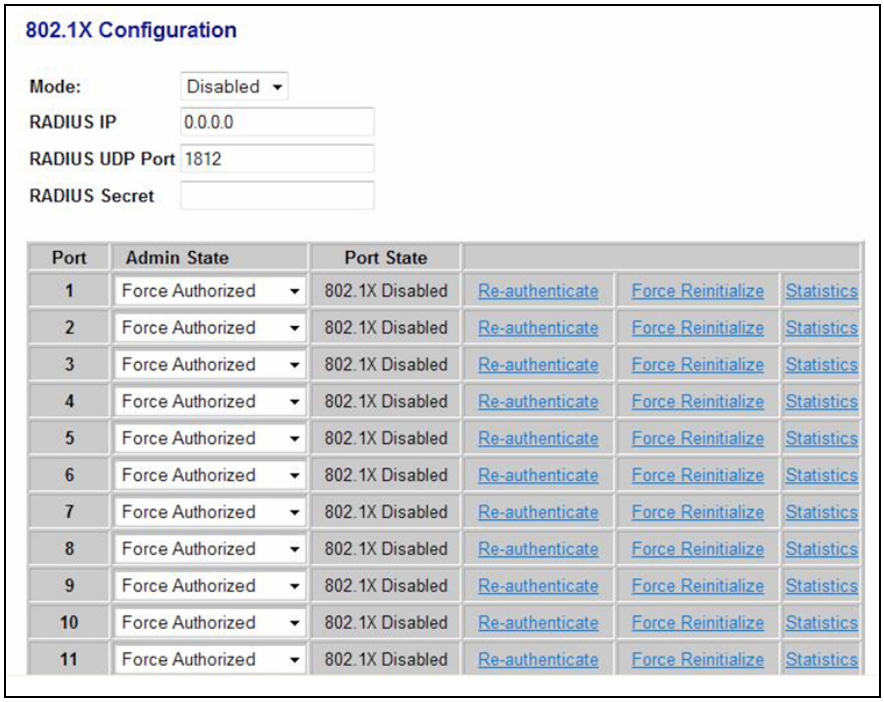


Figure 4-8. 802.1x configuration.

4.2.8 IGMP

You can enable or disable IGMP by clicking the checking box.
Select the “Port no.” for which you want to configure the mode.

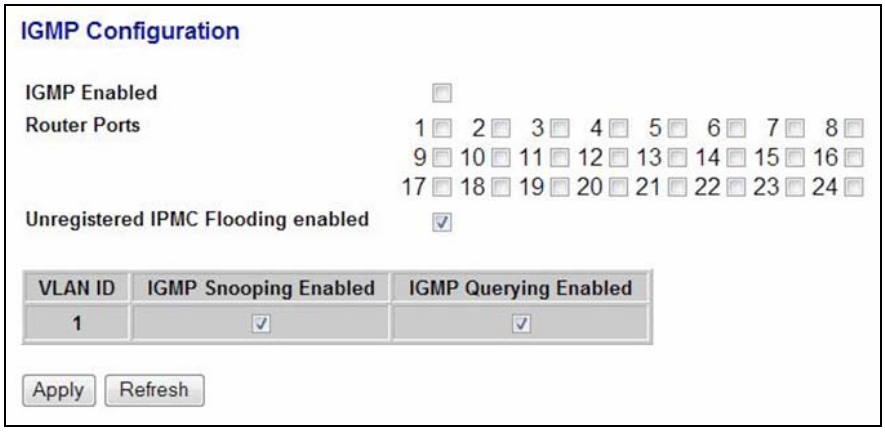


Figure 4-9. IGMP configuration.

4.2.9 Mirroring

Port Mirroring mirrors the traffic from the Source port to the Destination port.

Select the Destination port from port 1 to port 24, and then select the Source port by clicking the corresponding checkbox.

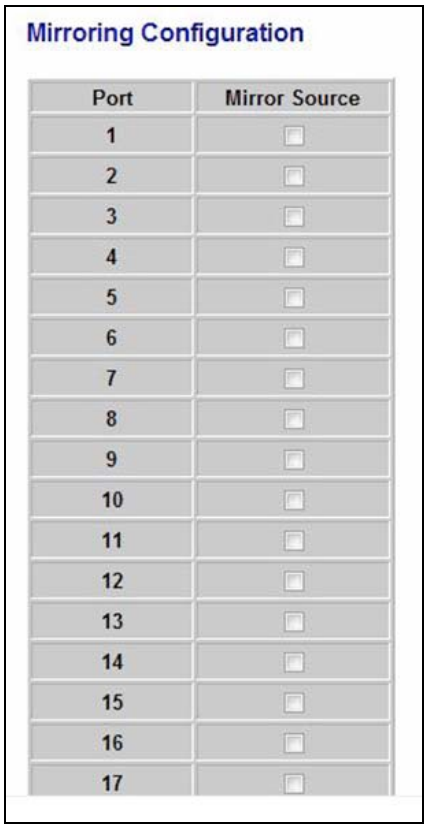


Figure 4-10. Port Mirroring configuration.

4.2.10 Quality of Service

You can enable or disable QoS by clicking the checkbox.

If you enable QoS, you can select the class of service for each port.

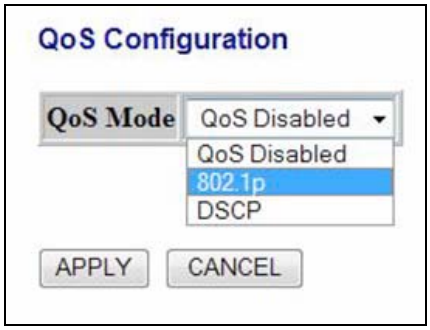


Figure 4-11. QoS configuration.

4.2.11 Filter

Select the “Port no.” for which you want to enable/disable the filtering IP address.

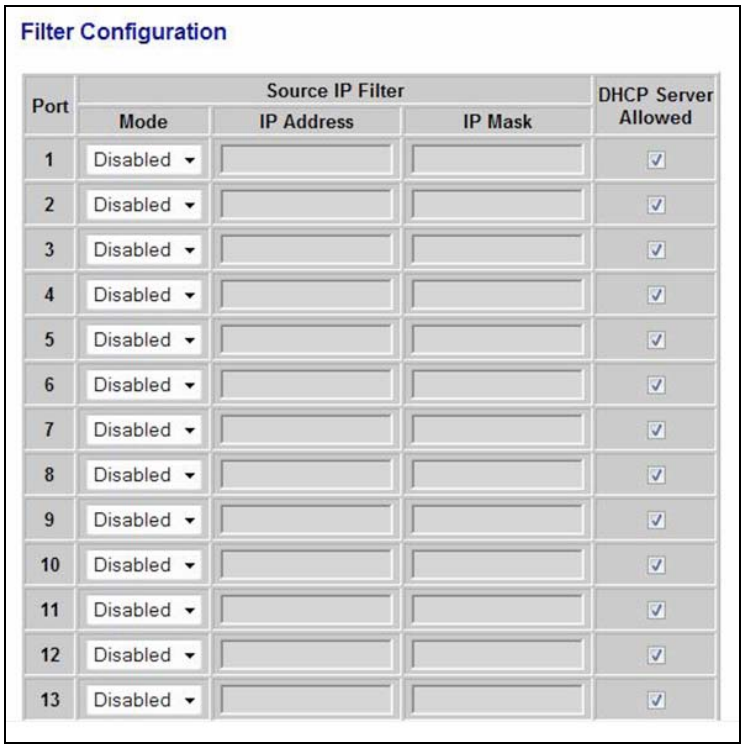


Figure 4-12. Filter configuration.

4.2.12 Rate Limit

Select the “Port no.” for which you want to configure the speed.

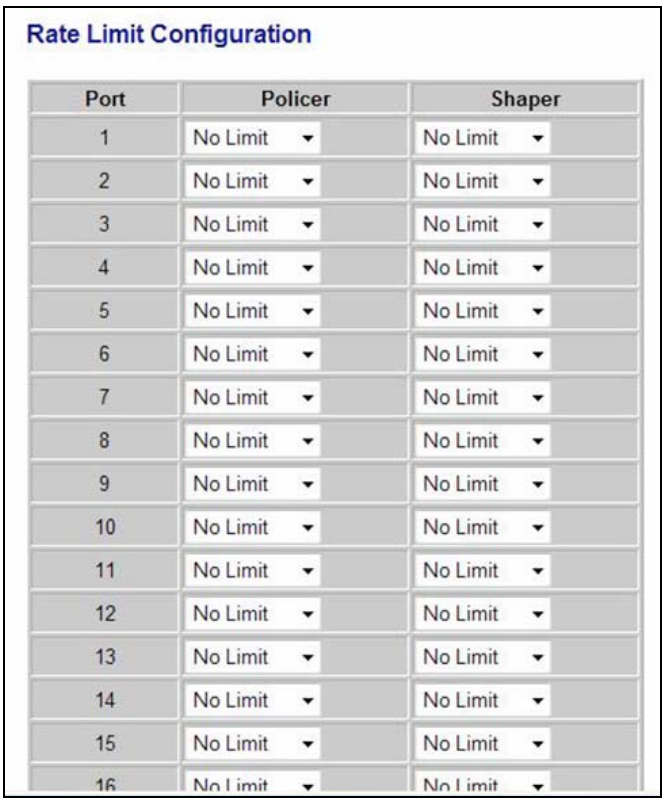


Figure 4-13. Rate Limit configuration.

4.2.13 Storm Control

You can set up storm control by configuring the modes.

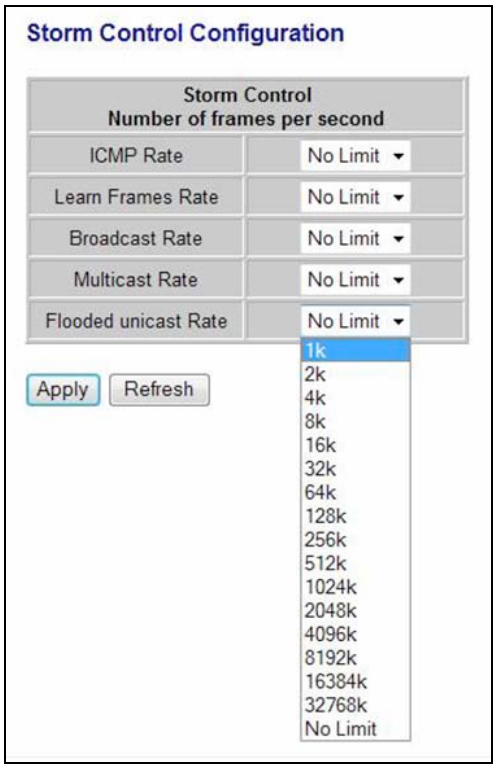
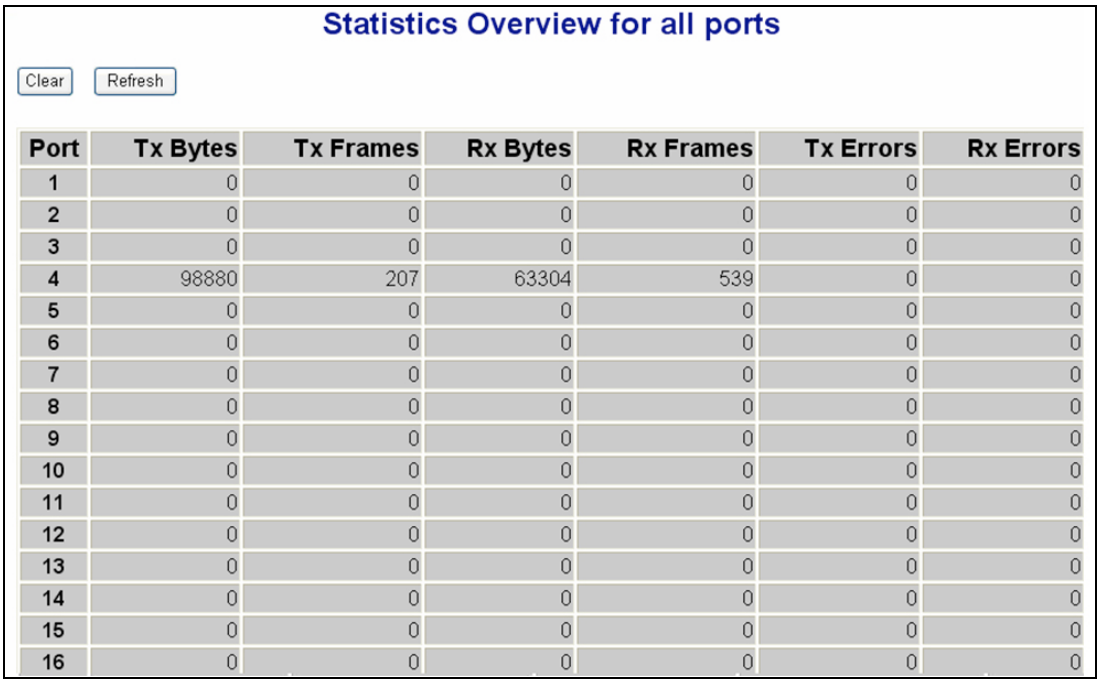


Figure 4-14. Storm Control configuration.

4.3 Monitoring

4.3.1 Statistics Overview

The screen below shows statistics for all ports.



Statistics Overview for all ports

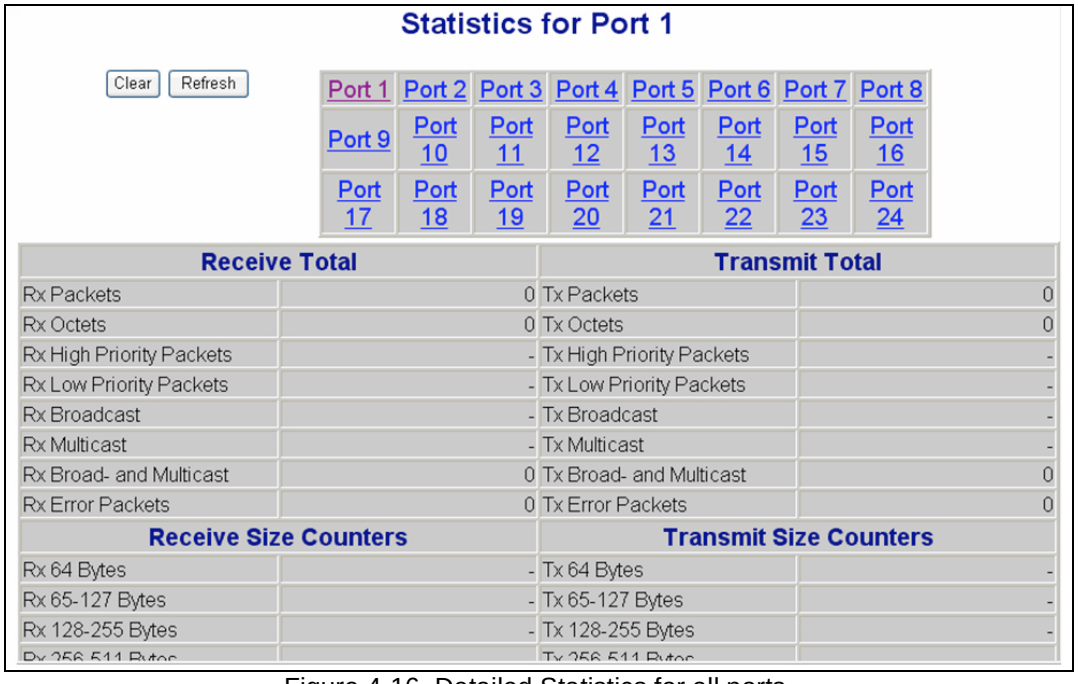
Clear Refresh

Port	Tx Bytes	Tx Frames	Rx Bytes	Rx Frames	Tx Errors	Rx Errors
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	98880	207	63304	539	0	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	0	0	0	0	0
8	0	0	0	0	0	0
9	0	0	0	0	0	0
10	0	0	0	0	0	0
11	0	0	0	0	0	0
12	0	0	0	0	0	0
13	0	0	0	0	0	0
14	0	0	0	0	0	0
15	0	0	0	0	0	0
16	0	0	0	0	0	0

Figure 4-15. Statistics Overview for all ports.

4.3.2 Detail Statistics

For detailed statistics of each port, click the port number.



Statistics for Port 1

Clear Refresh

Port 1 Port 2 Port 3 Port 4 Port 5 Port 6 Port 7 Port 8
Port 9 Port 10 Port 11 Port 12 Port 13 Port 14 Port 15 Port 16
Port 17 Port 18 Port 19 Port 20 Port 21 Port 22 Port 23 Port 24

Receive Total		Transmit Total	
Rx Packets	0	Tx Packets	0
Rx Octets	0	Tx Octets	0
Rx High Priority Packets	-	Tx High Priority Packets	-
Rx Low Priority Packets	-	Tx Low Priority Packets	-
Rx Broadcast	-	Tx Broadcast	-
Rx Multicast	-	Tx Multicast	-
Rx Broad- and Multicast	0	Tx Broad- and Multicast	0
Rx Error Packets	0	Tx Error Packets	0
Receive Size Counters		**Transmit Size Counters**	
Rx 64 Bytes	-	Tx 64 Bytes	-
Rx 65-127 Bytes	-	Tx 65-127 Bytes	-
Rx 128-255 Bytes	-	Tx 128-255 Bytes	-
Rx 256-511 Bytes		Tx 256-511 Bytes	

Figure 4-16. Detailed Statistics for all ports.

4.3.3 LACP Status

The screen below shows the LACP status for LACP ports.

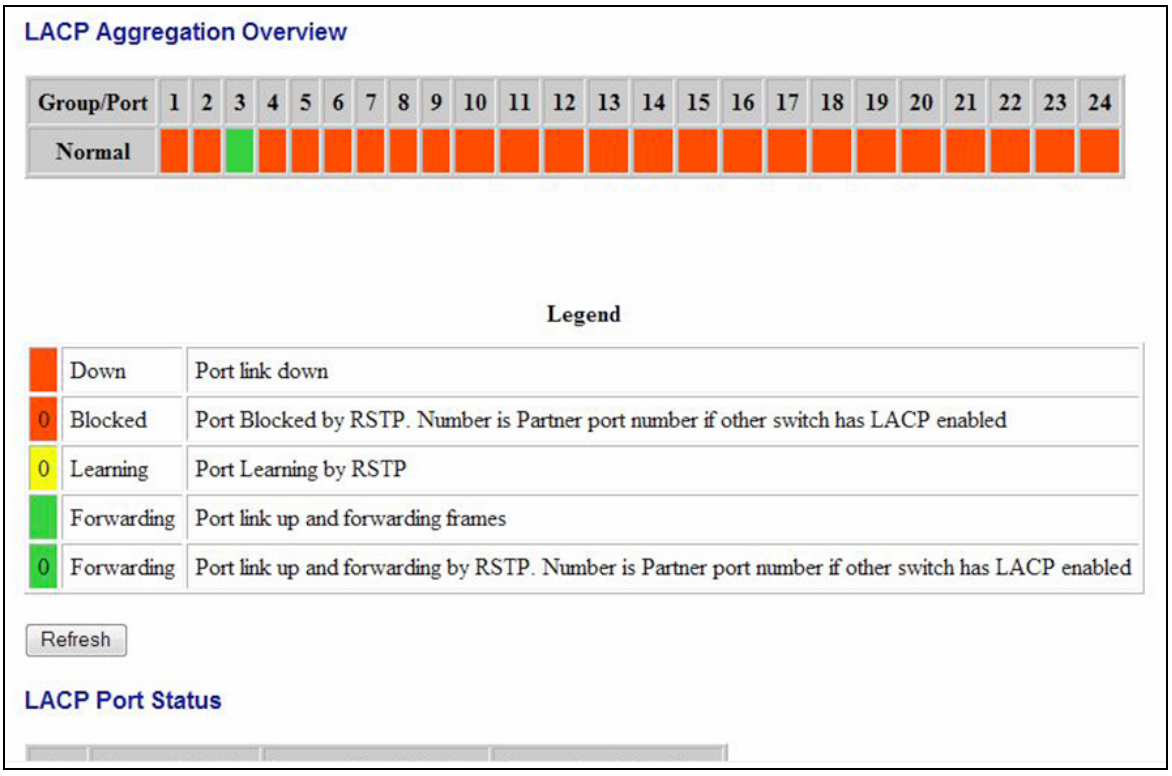


Figure 4-17. LACP Aggregation overview.

4.3.4 RSTP Status

The screen below shows RSTP status for RSTP ports.

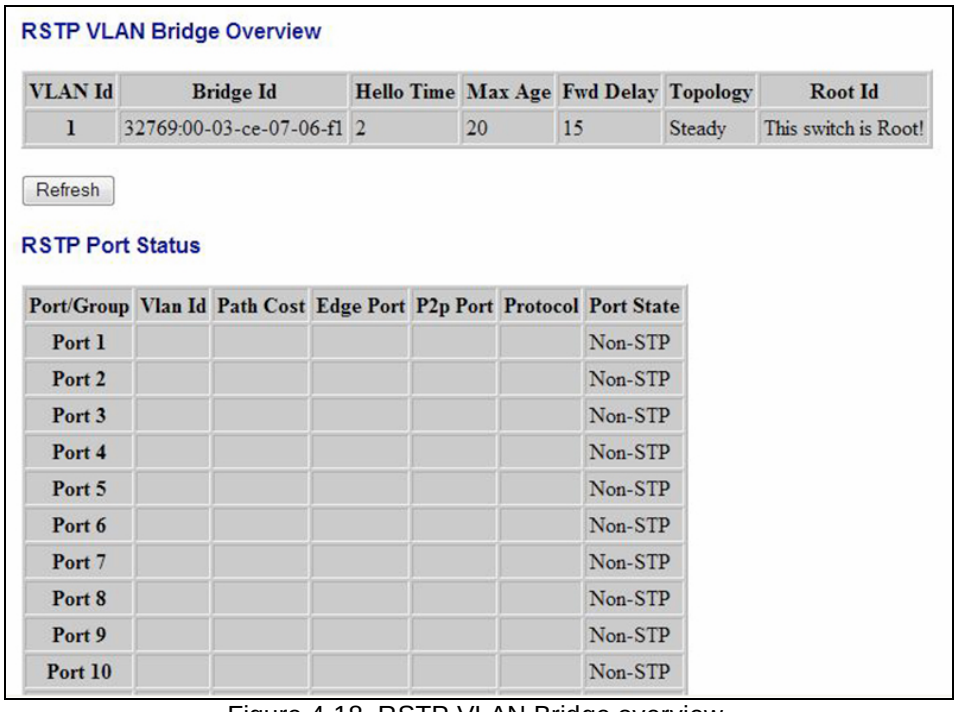


Figure 4-18. RSTP VLAN Bridge overview.

4.3.5 IGMP Status

The screen below shows IGMP status for IGMP ports.

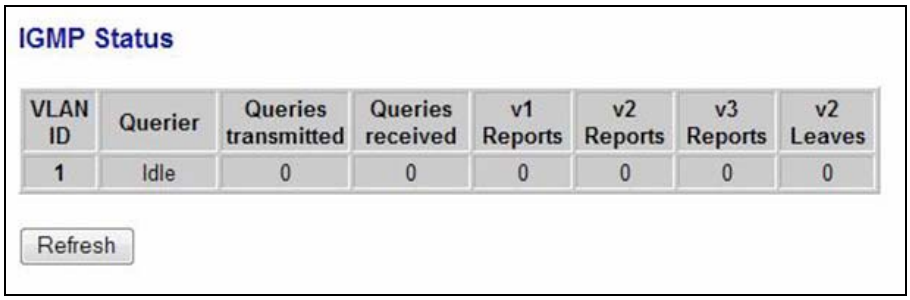


Figure 4-19. IGMP Status.

4.3.6 VeriPHY

Click the port number(s) and the mode to see VeriPHY cable status for a port(s).

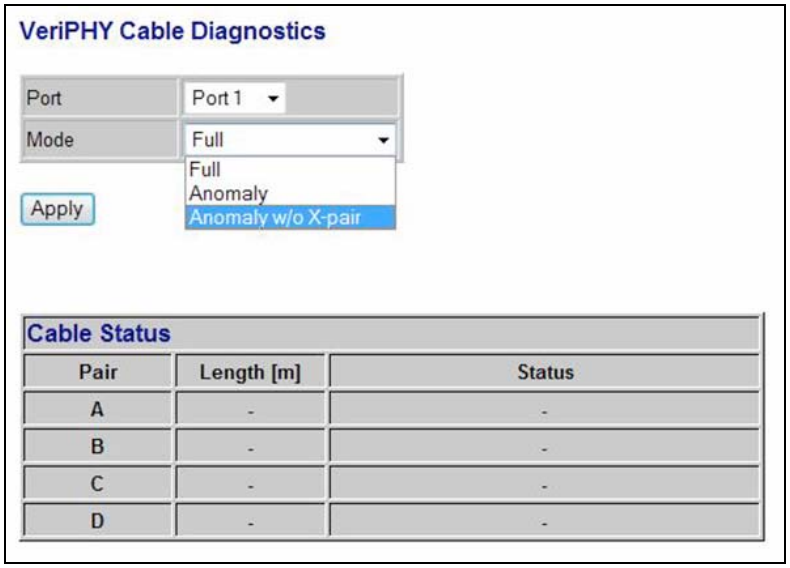


Figure 4-20 VeriPHY Cable Diagnostics

4.3.7 Ping

Choose the mode to select the target IP address.

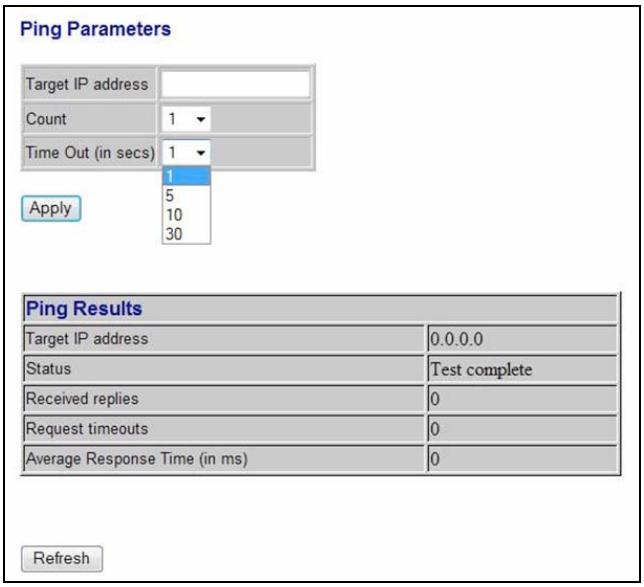


Figure 4-21. Ping Parameters.

4.4 Maintenance

4.4.1 Warm Restart

You can select yes/no to do the warm restart, and then the new settings will change according to your selection.

Figure 4-22. Warm Restart.

4.4.2 Factory Default

You can select yes/no to perform a Factory Default, and then the new settings will change according to your selection.

Figure 4-23. Factory Default.

4.4.3 Software Upload

Follow the instructions on the screen to upload the new software.

Figure 4-24. Software Upload.

4.4.4 Configuration File Transfer

Follow the instructions on the screen to upload and download the configuration.

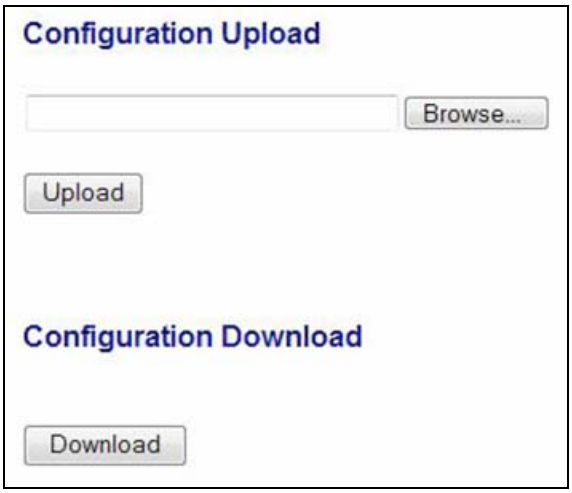
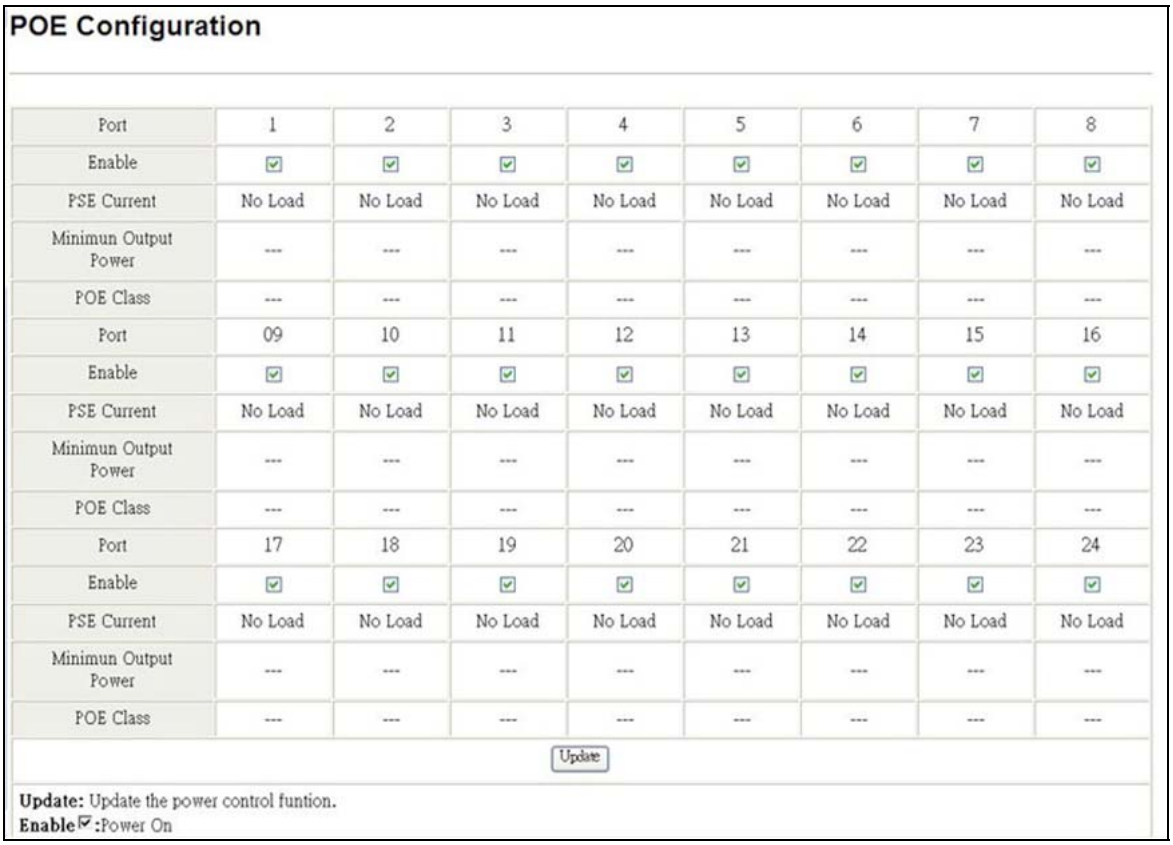


Figure 4-25. Configuration Upload and Download.

4.4.5 PoE

Remotely access and monitor the attached PD (Powered Device) status by using the Enable/Disable function.

1. Enable: PoE of the port is able to supply power to the attached PD (Powered Device).
2. PSE Current and Minimum Output Power: The status of the port's current and minimum output power.
3. POE class: each POE port will detect the class of the attached PD (Powered Device).
4. Click "Update" to confirm the setting.



POE Configuration

Port	1	2	3	4	5	6	7	8
Enable	☑	☑	☑	☑	☑	☑	☑	☑
PSE Current	No Load	No Load	No Load	No Load	No Load	No Load	No Load	No Load
Minimun Output Power	---	---	---	---	---	---	---	---
POE Class	---	---	---	---	---	---	---	---
Port	09	10	11	12	13	14	15	16
Enable	☑	☑	☑	☑	☑	☑	☑	☑
PSE Current	No Load	No Load	No Load	No Load	No Load	No Load	No Load	No Load
Minimun Output Power	---	---	---	---	---	---	---	---
POE Class	---	---	---	---	---	---	---	---
Port	17	18	19	20	21	22	23	24
Enable	☑	☑	☑	☑	☑	☑	☑	☑
PSE Current	No Load	No Load	No Load	No Load	No Load	No Load	No Load	No Load
Minimun Output Power	---	---	---	---	---	---	---	---
POE Class	---	---	---	---	---	---	---	---

Update

Update: Update the power control funtion.
Enable ☑ **:**Power On

Figure 4-26. PoE.

4.4.6 Logout

Click “Logout” to logout of the switch.

4.4.7 Forgot Password

If you forgot your IP or password, use the reset button for the factory default setting first. Then take the following steps to reset the Web Smart Switch back to the original default:

Step 1: Turn on the Web Smart Switch.

Step 2: Press and hold the reset button continuously for 15 seconds then release the reset button.

Step 3: The switch will reboot for 20 seconds and the switch configuration will reset to the default setting.

Step 4: Now you can use the original factory default password to login to the switch.

About Black Box

Black Box Network Services is your source for more than 118,000 networking and infrastructure products. You'll find everything from cabinets and racks and power and surge protection products to media converters and Ethernet switches all supported by free, live 24/7 Tech support available in 30 seconds or less.

LPBG716A, rev. 1